

Docket No.: 124251
Serial No.: 10/604,740

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of ~~[[removing]]~~ reducing a metal oxide ~~[[from]]~~ on an alloy surface of an article, comprising the steps of:
 - (1) placing the article within a vacuum chamber,
 - (2) applying a vacuum within the environment of the chamber,
 - (3) generating a meta-stable H_3^+ reductive plasma within the vacuum environment of the chamber, and
 - (4) exposing the alloy surface to the reductive plasma for a time sufficient to reduce the metal oxide.
2. (cancelled)
3. (currently amended) The method according to Claim 1 wherein the alloy surface further comprises at least one crevice having a surface comprising the ~~[[an]]~~ metal oxide.
4. (cancelled)
5. (currently amended) The method according to Claim 1 ~~[[Claim 4]]~~ wherein generating the meta-stable plasma comprises using a plasma generator.
6. (currently amended) The method according to Claim 1 ~~[[Claim 4]]~~ wherein the vacuum within the environment of the chamber is about 20 torr or less.
7. (original) The method according to Claim 6 wherein the step (2) further includes the step of purging the environment of the chamber with a reducing gas prior to or during the applying of a vacuum.
8. (original) The method according to Claim 6 wherein the vacuum is about 10 to about 15 torr.

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9. (currently amended) The method according to Claim 5 [[Claim 4]] wherein the step (4) comprises directing the meta-stable plasma toward the metal oxide.
10. (original) The method according to Claim 9 wherein the directing step comprises using a plasma torch, and positioning a discharged stream of the meta-stable plasma from the plasma torch toward the metal oxide.
11. (currently amended) The method according to Claim 10 wherein the plasma torch comprises a discharge nozzle, an electrode rigidly affixed to and electrically isolated from [[in non-contacting relation with]] the discharge nozzle, a source of a plasma-forming gas for passing through the discharge nozzle, and a power supply device for the formation of a non-transferred arc between the discharge nozzle and the electrode.
12. (original) The method according to Claim 1 wherein a reductive plasma comprising a meta-stable H_3^+ plasma is generated from a plasma-forming gas comprising about 8% or less hydrogen gas, and a remainder of an inert gas.
13. (original) The method according to Claim 9 wherein the directing step comprises applying a reverse-bias voltage potential between the plasma generator and the alloy surface.
14. (original) The method according to Claim 12 wherein the directing step comprises passing the meta-stable plasma through a magnetically-generated channel.
15. (original) A method of removing a metal oxide from an alloy surface of an article, comprising the steps of:
- (1) placing the article within a vacuum chamber,
 - (2) applying a vacuum of about 20 torr or less within the environment of the chamber,
 - (3) using a plasma torch to generate a concentration of active H_3^+ ion within the vacuum environment of the chamber, the plasma torch comprising a discharge nozzle, an electrode in non-contacting relation with the discharge nozzle, a source of a plasma-forming gas for

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passing through the discharge nozzle, and a power supply device for the formation of a non-transferred arc between the discharge nozzle and the electrode, and

(4) positioning the discharge nozzle toward the article, to direct the concentration of active H_3^+ ion toward the metal oxide on the alloy surface for a time sufficient to reduce the metal oxide.

16. (original) The method according to Claim 15 further comprising the step of applying a reverse-bias voltage potential between the plasma torch and the alloy surface.

Claims 17-20 (cancelled)

21. (new) The method according to Claim 1 wherein the vacuum is at least 0.1 torr.

22. (new) The method according to Claim 21 wherein the vacuum is at least 1 torr.

23. (new) The method according to Claim 1 wherein the vacuum within the environment of the chamber is less than 15 torr.

24. (new) The method according to Claim 23 wherein the vacuum is at least 0.1 torr.

25. (new) The method according to Claim 24 wherein the vacuum is at least 1 torr.

26. (new) The method according to Claim 1 wherein the vacuum within the environment of the chamber is about 10 torr to about 15 torr.